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Previous Year Paper

Chemistry - 2018



Fill In the Blanks

1. Fill in the blanks by choosing the appropriate word/words from those given in the brackets:

(square pyramidal, electrical, 74; 26, sp^3d^2 , sp^3d , chemical, 68, 32, tetrahedral, yellow, white, iodoform, Lucas)

A Galvanic cell converts _____ energy into _____ energy.

Answer

2. Fill in the blanks by choosing the appropriate word/words from those given in the brackets:

(square pyramidal, electrical, 74; 26, sp^3d^2 , sp^3d , chemical, 68, 32, tetrahedral, yellow, white, iodoform, Lucas)

The percentage of unoccupied spaces in bcc and fcc arrangements are _____ and _____ respectively.

Answer

3. Fill in the blanks by choosing the appropriate word/words from those given in the brackets:

(square pyramidal, electrical, 74; 26, sp^3d^2 , sp^3d , chemical, 68, 32, tetrahedral, yellow, white, iodoform, Lucas)

Propan-2-ol on reaction with iodine and sodium hydroxide gives _____ precipitate and the reaction is called _____ test.

Answer

4. Fill in the blanks by choosing the appropriate word/words from those given in the brackets:

(square pyramidal, electrical, 74; 26, sp^3d^2 , sp^3d , chemical, 68, 32, tetrahedral, yellow, white, iodoform, Lucas)

The geometry of $XeOF_4$ molecule is _____ and the hybridisation of Xenon atom in the molecule is _____.

Answer



Match The Following

5. Match the following:

A. Rate constant

(i) Dialysis

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ICSE 2018		2018
B. Biodegradable	(iii) Glycine	
C. Study Assignments, Solved Previous Year Papers	(iv) Questions and Answers. Free Forever.	
D. Purification of colloids	(iv) PHBV	

Answer



Multiple Choice Questions

6. Complete the following statements by selecting the correct alternative from the choices given:
During the course of an S_N1 reaction, the intermediate species formed is:

- A. a carbocation
- B. a free radical
- C. a carbanion
- D. an intermediate complex

Answer

7. Complete the following statements by selecting the correct alternative from the choices given:
Purification of aluminium by electrolytic refining is called:

- A. Serpeck's process
- B. Hoopes process
- C. Hall's process
- D. Baeyer's process

Answer

8. Complete the following statements by selecting the correct alternative from the choices given:
An aqueous solution of urea freezes at -0.186°C , K_f for water = $1.86\text{ K kg mol}^{-1}$, K_b for water = $0.512\text{ K kg mol}^{-1}$. The boiling point of the urea solution will be:

- A. 373.065 K
- B. 373.0512 K
- C. 373.186 K
- D. 373.512 K

Answer

9. Complete the following statements by selecting the correct alternative from the choices given:
In the dehydration of alcohols to alkenes by heating with concentrated sulphuric acid, the initiation step is:

- A. formation of carbocation
- B. formation of an ester

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D. elimination of water

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Short Answer Type

10. Answer the following questions:

Why does the density of transition elements increase from Titanium to Copper? (at. no. Ti = 22, Cu = 29)

[Answer](#)

11. Answer the following question:

Why does the density of transition elements increase from Titanium to Copper? (at. no. Ti = 22, Cu = 29)

[Answer](#)

12. Identify the compounds A, B and C.

 $\text{CH}_3\text{CN} \xrightarrow{\text{H}_2\text{O}/\text{H}^+} \text{A} \xrightarrow{\text{NH}_3} \text{B} \xrightarrow{\text{Heat}} \text{C} \xrightarrow{\text{Br}_2/\text{KOH}} \text{D}$ [Answer](#)

13. Calculate the osmotic pressure of a solution prepared by dissolving 0.025 g of K_2SO_4 in 2.0 litres of water at 25°C assuming that K_2SO_4 is completely dissociated. (mol. wt. of $\text{K}_2\text{SO}_4 = 174 \text{ g mol}^{-1}$)

[Answer](#)

14. What type of isomerism is shown by the following coordination compounds:

 $[\text{PtCl}_2(\text{NH}_3)_4]\text{Br}_2$ and $[\text{PtBr}_2(\text{NNH}_3)_4]\text{Cl}_2$

Write their IUPAC names.

[Answer](#)

15. (i) Write the rate law expression for the reaction $\text{A} + \text{B} + \text{C} \rightarrow \text{D} + \text{E}$, if the order of reaction is first, second and zero with respect to A, B, and C, respectively.

(ii) How many times the rate of reaction will increase if the concentration of A, B and C are doubled in the equation given in (i) above?

[Answer](#)

16. The rate of reaction becomes four times when the temperature changes from 293 K to 313 K. Calculate the energy of activation (E_a) of the reaction assuming that it does not change with temperature. ($R = 8.314 \text{ J K}^{-1} \text{ mol}^{-1}$)

[Answer](#)

17. How do antisemitic differ from disinfectants?

[Answer](#)

18. State the role of the following chemicals in the food industry:

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(ii) Aspartame

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[Answer](#)

19. An aromatic organic compound [A] on heating with NH_3 and Cu_2O at high pressure gives [B]. The compound [B] on treatment with an ice-cold solution of NaNO_2 and HCl gives [C], which on heating with Cu/HCl gives compound [A] again. Identify the compounds [A], [B] and [C]. Write the name of the reaction for the conversion of [B] to [C].

[Answer](#)

20. Write the names of the monomers for the following polymers:

Bakelite

[Answer](#)

21. Write the names of the monomers for the following polymer:

Nylon-2-nylon-6

[Answer](#)

22. Name the purine bases and pyrimidine bases present in RNA and DNA.

[Answer](#)

23. How will you obtain the following? (Give balanced equation.)

Picric acid from phenol

[Answer](#)

24. How will you obtain the following? (Give balanced equation.)

Ethyl chloride from diethyl ether.

[Answer](#)

25. 40% of a first-order reaction is completed in 50 minutes. How much time will it take for the completion of 80% of this reaction?

[Answer](#)

26. The freezing point of a solution containing 5.85 g of NaCl in 100 g of water is -3.348°C . Calculate the van't Hoff factor for this solution. What will be the experimental molecular weight of NaCl ? (K_f for water = $1.86 \text{ K kg mol}^{-1}$, at wt, $\text{Na} = 23$, $\text{Cl} = 35.5$)

[Answer](#)

27. An aqueous solution containing 12.48 g of barium chloride (BaCl_2) in 1000g of water, boils at 100.0832°C . Calculate the degree of dissociation of barium chloride.

(K_b for water = $0.52 \text{ K kg mol}^{-1}$, at. wt. $\text{Ba} = 137$, $\text{Cl} = 35.5$)

[Answer](#)

28. Examine the defective crystal given below and answer the question that follows :

A^+	B^-	A^+	B^-	A^+
B^-		B^-	A^+	B^-
A^+	B^-	A^+	B^-	A^+
B^-	A^+	B^-	A^+	B^-

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State if the above defect is stoichiometric or non-stoichiometric. How does this defect affect the density of the crystal? Also, write the term used for this type of defect.

[Answer](#)

29. Give a reason for the following:

For ferric hydroxide sol, the coagulating power of phosphate ion is more than chloride ion.

[Answer](#)

30. Give a reason for the following:

Medicines are more effective in their colloidal form.

[Answer](#)

31. Give a reason for the following:

Gelatin is added to ice creams.

[Answer](#)

32. For the complex ion $[\text{Fe}(\text{CN})_6]^{3-}$, state:

- (i) The type of hybridisation
- (ii) The magnetic behaviour
- (iii) The oxidation number of the central metal atom

[Answer](#)

33. Write the IUPAC name of $[\text{Co}(\text{en})_2\text{Cl}_2]^+$ ion and draw the structure of its geometrical isomers.

[Answer](#)

34. Explain why :

Mn^{2+} is more stable than Fe^{2+} towards oxidation to +3 state. (At. no. of Mn = 25, Fe = 26)

[Answer](#)

35. Explain why:

Transition elements usually form coloured ions.

[Answer](#)

36. Explain why:

Zr and Hf exhibit similar properties.

[Answer](#)

37. Complete and balance the following chemical

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Answer

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38. Arrange the following in the increasing order of their basic strength:



Answer

39. Give a balanced chemical equation of convert methyl cyanide to ethyl alcohol.

Answer

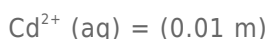
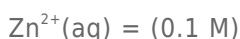
40. What happens when benzene diazonium chloride reacts with phenol in weak alkaline medium?
(Give balanced equation).

Answer

41. Name the sulphide ore of Copper. Describe how pure copper is extracted from this ore.

Answer

42. Calculate the emf and ΔG° for the cell reaction at 25°C :



Answer

43. Define the following terms :

- (1) Equivalent conductivity
- (2) Corrosion of metals

Answer

44. The specific conductivity of a solution containing 5 g of anhydrous BaCl_2 (mol. wt = 208) in 1000 cm^3 of a solution is found to be $0.0058 \text{ ohm}^{-1}\text{cm}^{-1}$. Calculate the molar and equivalent conductivity of the solution.

Answer

45. What is an electrochemical series? How is it useful in predicting whether a metal can liberate hydrogen from acid or not?

Answer

46. Explain why :

Nitrogen does not form pentahalides

Answer

47. Explain why :

Helium is used for filling weather balloons.

Answer

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48. Explain why
ICl is more reactive than I_2

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[Answer](#)

49. Draw the structures of the following :

(1) $HClO_4$

(2) H_3PO_3

[Answer](#)

50. Explain why :

Mercury loses its meniscus in contact with ozone.

[Answer](#)

51. Halogens are coloured and the colour deepens on moving down in the group from fluorine to iodine.

[Answer](#)

52. Explain why:

Hydride of sulphur is a gas while hydride of oxygen is a liquid.

[Answer](#)

53. Complete and balance the following reactions:

(1) $NaCl + MnO_2 + H_2SO_4 \rightarrow \text{___} + \text{___} + \text{___}$ (2) $KMnO_4 + SO_2 + H_2O \rightarrow \text{___} + \text{___} + \text{___}$

[Answer](#)

54. Give balanced equations for the following reactions:

Benzaldehyde reacts with hydrazine.

[Answer](#)

55. Give balanced equations for the following reaction:

Acetic acid reacts with phosphorous pentachloride.

[Answer](#)

56. Give balanced equations for the following reaction:

Acetone reacts with sodium bisulphite.

[Answer](#)

57. Give one chemical test each to distinguish between the following pairs of compounds:

(1) Ethanol and acetic acid

(2) Acetaldehyde and benzaldehyde

[Answer](#)

58. Write chemical equations to illustrate the following name reactions:

Clemmensen's reduction

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59. Write chemical equations to illustrate the following name reactions:

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Rosenmund's reduction

Answer

60. Write chemical equations to illustrate the following name reactions:

HVZ reaction

Answer

61. Explain why :

Acetaldehyde undergoes aldol condensation, but formaldehyde does not.

Answer

62. Explain why:

Acetic acid is weaker acid as compared to formic acid.

Answer